Dell DX Object Storage

Store Content in Context

Leverage rich metadata to efficiently store, access and distribute digital content

The Dell DX Object Storage Platform

Simplifying IT:

Data volumes are growing exponentially, and Dell™ has an evolutionary and comprehensive Intelligent Data Management (IDM) strategy to help give you back control. Dell's IDM portfolio includes platforms, software, applications and services that are designed to give you efficiency and visibility into your organization's data access and usage requirements so that you can align storage tiering and management policies to the changing business value of information. In particular, storage of unstructured content such as rich media, presents a challenge which must be dealt with for compliance and business requirements. Use of traditional SAN and NAS disk for secondary storage of content or data objects comes with a high price tag and tape-based systems bring their own access challenges. To meet these needs, Dell created the DX Object Storage Platform as part of its IDM strategy to offer an affordable peer-scaling object storage architecture based on industry-standard hardware.

The Dell Difference:

Massive scaling without complexity

- Scale to Billions of Files and Terabytes or Petabytes of data
- Simple architecture with flat address space removes file management complexity
- Ideal for large scale digital content and long-term data storage

Fully integrated storage platforms

- Based on Dell's energy optimized and affordable rack-based x86 server platforms
- Unified event notification and centralized cluster management

Powerful data and storage management

- Self-Managing, Self-Healing
- Policy based local and/or wide area replication and distribution
- Extensive metadata support
- Non-disruptive capacity expansion and retirement

Easy to deploy and manage

- No database complexity, no file system, no LUNs, no RAID groups
- Setup uses a single configuration including network services

Sophisticated Independent Software Vendor (ISV) partner ecosystem

- Native HTTP access and custom API support for applications from ISV partners in areas such as ECM, e-Discovery, and medical image archiving
- Optional CIFS/NFS support via DX Cluster File Server

Advanced data handling:

- Named objects — allows multiple groups to share storage pool
- Authorization and authentication — validates external user access to data
- Multi-part range reads — supports optimized viewing of streaming media
- Transparent read cache — improved performance by keeping frequently accessed objects in memory
- Optional DX6000G Storage Compression Node enables object compression up to 90% (depending upon file type), and offers the flexibility to specify what data sets get compressed in either "Fast" or "Best" modes"

Portfolio of Dell Service offerings

- Assessment, design and deployment services
- Data migration services to optimize your archiving strategy

Optimize management of unstructured information

Intelligent Data Management is an evolutionary lifecycle approach to information that manages capacity optimization along with automated policies that utilize metadata along with storage management software to automatically place content on the right storage tier and type. A key pillar of this strategy is the Dell DX Object Storage Platform — a complete, integrated hardware and software solution designed to handle storage of files and accompanying metadata on disk-based storage nodes. The platform scales to handle billions of objects through the use of unique file identifiers created from one enormous, flat, non-hierarchical address space. A basic DX configuration consists of either 2Ux4 drive or density-optimized 2Ux12 drive x86-based "storage nodes" and one out-of-band cluster services node. Each storage node can contain between 2 to 24TB of raw data. Use of standards based hardware and DX Object Storage software creates a low cost solution with easier, smarter management and scalability than traditional NAS platforms.

Massive scalability without complexity

Many businesses have massive amounts of digital records in diverse formats such as e-mail, instant messages, documents, spreadsheets, graphics, images, and videos that may be subject to industry or government regulations for access and retention. This class of information is growing faster than any other type and must be appropriately classified, managed and placed in storage systems that are easily accessible for search and discovery. Ideal for large-scale digital content and long-term data storage, the peer-scaling architecture of the Dell DX Object Storage Platform gives you the ability to add capacity in a modular approach without the need to configure LUNs, RAID groups or hierarchical file structures. Scale at your own pace, non-disruptively, by starting with a cluster of 2TB and grow in increments as small as 1TB with the flexibility to grow up to multiple petabytes and billions of objects.

Access the right files at the right time

The relative business value of information is a function of its context — time, date and place of creation in addition to the application, retention/deletion policy, format and other associated descriptors or metadata. Keeping track of billions of content files or objects via metadata descriptions and policies makes access, discovery, replication, distribution and retention much more practical than traditional approaches which rely upon file trees and disk locations. For example, a business can meet data governance needs with automated policies regarding file retention and rules that permit only authorized users to reference, alter and delete data. Integrity of data stored in DX Object Storage Platforms is assured in part by the self-healing functions which continuously check stored objects to detect and repair errors and automatically reconfigure and regenerate objects without the need for IT intervention. Additional protection comes from automated replication options between local clusters and across multiple sites.

Incorporate evolving technology transparently

Dell has configured the DX Object Storage Platform with standards-based hardware and money-saving features such as power optimization and drive spin-down. Modular design flexibility makes it possible to purchase storage on demand and easily add, replace or retire nodes across multiple hardware generations without any manual migration requirements. The latest developments in Content Addressable Storage technology are the platform's underlying foundation. Each object stored gets a 128 bit Universally Unique ID (UUID) or address that the DX Cluster derives from a worldwide flat address space. At the time of creation two or more replicas of the object with the same UUID are created and stored on different storage nodes. Object location independence makes access, migration, failover and movement transparent to the user and easier to manage. Peer scaling symmetrical nodes take care of load balancing.

Foundation for an ecosystem where data is automatically stored on the optimal storage tier

The optional DX6000G node can function as either a Cluster File Server for CIFS/NFS access to the DX storage configuration OR as a Storage Compression Node, able to compress mutable objects up to 90% (depending on file type). Users can specify data sets to be compressed in either "Fast" or "Best" modes. For customers needing to store information from multiple applications or departments with a single DX Cluster, the operating system also incorporates names objects nested within buckets and domains to support internal cloud or multi-tenant user environments.

Services to help find the right solution

Object storage is one technology that can be utilized to optimize your storage and meet your business goals. Dell ProConsult* storage services can work collaboratively with you to determine a blueprint that fits within your limitations through a catalog of well-defined engagements including best practice archiving design.

Solution ecosystem

Incorporated into the design of the DX platform is a simple HTTP storage interface to make it easy for Independent Software Vendors (ISVs) to integrate with the platform and leverage a common object-storage pool. Standard file protocol access is provided with an optional CIFS/NFS gateway, the DX Cluster File Server (CFS), which allows applications using traditional file-based protocols to store data in a DX cluster, making it ideal for home/group shares or secondary file storage. Dell is developing solutions with an ecosystem of partners for medical archiving, file, email and sharepoint archiving, eDiscovery and enterprise content management.

Features	DX Cluster Services Node (DX6000)	DX Storage Node (DX6012S)	DX Storage Node (DX6004S)	DX Storage Compression Node (DX6000G SCN)	DX Cluster File Server (DX6000G CFS)
Software	DX Object Storage Software	DX Object Storage Software[1]	DX Object Storage Software[1]	DX Storage Compression Node Software	DX Cluster File Server Software[4]
Software features	Content Routing, Selectable Immutability, Network Services, Replicator Services	Object Storage Management, Storage Optimization	Object Storage Management, Storage Optimization	Dell'a Ocarina based software providing object compression for the DX Object Storage Platform	CIFS/NFS protocol gateway to DX Object Storage Platform
Storage	Six 3.5" SATA (7.2K) Hard disk drives. Available capacities: 500GB, 1TB	Twelve 3.5" SATA (7.2K) Hard disk drives. Available capacities: 500GB, 1TB, 2TB	Four 3.5" SATA (7.2K) Hard disk drives Available capacities: 500GB, 1TB , 2TB	Four 3.5" NearLine SAS (7.2K) Hard disk drives Available capacities: 500GB, 1TB	Four 3.5" NearLine SAS (7.2K) Hard disk drives, Available capacities: 500GB, 1TB
Maximum internal raw capacity	6TB	24TB	8TB	2TB	2TB
Peripheral bay	DVD-ROM	N/A	N/A	DVD-ROM	DVD-ROM
Data protection	RAID 5 through PERC H700 (6Gb/s) with 512MB battery-backed cache	User-defined object replication (no RAID required)	User-defined object replication (no RAID required)	RAID 1 through a SAS6iR Controller	RAID 1 through a SAS6iR Controller
Communication (standard)	Four embedded Broadcom® NetXtreme II™ 5709c Gigabit Ethernet NIC with failover	One Dual-Port Broadcom 5716 Gigabit NIC	One Dual-Port Broadcom 5716 Gigabit NIC	One Dual-Port Broadcom 5716 Gigabit NIC	One Dual-Port Broadcom 5716 Gigabit NIC
Communication (optional)	Broadcom NetXtreme II 5709C Quad-port Gigabit Ethernet Adapter	Broadcom NetXtreme II 5709C Quad-port Gigabit Ethernet Adapter	Broadcom NetXtreme II 5709 Dual-Port Gigabit Ethernet Adapter	Broadcom NetXtreme II 5709 Quad-Port Gigabit Ethernet Adapter	Broadcom NetXtreme II 5709 Quad-Port Gigabit Ethernet Adapter
Power	Two hot-plug 870W power supplies	750W non-redundant or redundant hot-plug power supply	One non-redundant 350W power supply Two hot-pluggable redundant 400W hot-plug power supplies	Two hot-plug 500W power supplies	Two hot-plug 500W power supplies
Availability features	Hot-plug hard drives, Hot-plug redundant power, Hot-plug redundant cooling, ECC memory, Spare Row Single Device Data Correction (SDDC), iDRAC6 Enterprise or iDRAC6 Express, Tool-less chassis, Cluster support	Hot-swap hard drives, redundant power, ECC memory, Quad-Pack LED, iDRAC6 Enterprise or iDRAC6 Express	Hot-swap hard drives, redundant power, ECC memory, Quad-Pack LED, iDRAC6 Enterprise or iDRAC6 Express	LCD diagnostic with hot-swap HDD chassis; TPM hot-swap drives; hot-swap redundant power supply; toolless hot-swap hard drive chassis	LCD diagnostic with hot-swap HDD chassis; TPM hot-swap drives; hot-swap redundant power supply; toolless hot-swap hard drive chassis
Chassis dimensions	2U Height: 8.64cm (3.40") Width: 44.31cm (17.44") Depth: 68.07cm (26.80") Weight (maximum configuration): 26.1kg (57.54lbs)	2U Height: 8.67cm (3.42") Width: 44.52cm (17.53") Depth: 66.46cm (26.17") Weight (maximum configuration) 29.0kg (63.8lbs)	1U Height: 42.4mm (1.67") Width: 434.0mm (17.10") Depth: 610mm (24.00") Weight (maximum configuration): 15kg (33.02lbs)	1U Height: 42.9mm (1.69") Width: 434.0mm (17.10") Depth: 482.4mm (18.98") Weight (maximum configuration): 14.1kg (31.04lbs)	1U Height: 42.9mm (1.69") Width: 434.0mm (17.10") Depth: 482.4mm (18.98") Weight (maximum configuration): 14.1kg (31.04lbs)
System management	Dell OpenManage™ featuring Dell Management Console Lifecycle Controller iDRAC6 Enterprise (Optional) VFlash (Optional)	BMC, IPMI 2.0 compliant Lifecycle Controller enabled via iDRAC6 Enterprise VFlash - Unified Server Communicator (optional).	BMC, IPMI 2.0 compliant Lifecycle Controller enabled via iDRAC6 Enterprise VFlash - Unified Server Communicator (optional).	MBC, IPMI 2.0 compliant Lifecycle Controller enabled via iDRAC6 Enterprise VFlash - Unified Server Communicator (optional)	MBC, IPMI 2.0 compliant Lifecycle Controller enabled via iDRAC6 Enterprise VFlash - Unified Server Communicator (optional)
Acoustics	Idle:LwA-UL[2] = 5.5 bels, LpAm[3] = 39 dBA	Idle: LwA-UL[2] = 6.4 bels, LpA[3] = 51 dBA	Idle: LwA-UL[2] = 5.5 bels, LpA[3] = 39 dBA	Idle: LwA-UL[2] = 5.8 bels; LpA[3] = 43.5 dBA	Idle: LwA-UL[2] = 5.8 bels; LpA[3] = 43.5 dBA
Rail support	ReadyRails™ sliding rails for 4-post racks, static ReadyRails™ for 4-post and 2-post racks, and optional support for cable management arm	ReadyRails™ sliding rails for 4-post racks, static ReadyRails™ for 4-post and 2-post racks, and optional support for cable management arm	ReadyRails™ sliding rails for 4-post racks, static ReadyRails™ for 4-post and 2-post racks, and optional support for cable management arm	ReadyRails™ sliding rails for 4-post racks, static ReadyRails™ for 4-post and 2-post racks, and optional support for cable management arm	ReadyRails™ sliding rails for 4-post racks, static ReadyRails™ for 4-post and 2-post racks, and optional support for cable management arm
Regulatory and environmental compliance	Regulatory Model: E02S Regulatory Type: E02S001	Regulatory Model: E13S Regulatory Type: E13S001	Regulatory Model: E07S Regulatory Type: E07S002	Regulatory Model: E07S Regulatory Type: E07S001	Regulatory Model: E07S Regulatory Type: E07S001

* Availability and terms of Dell Services vary by region. For more information, visit www.dell.com/servicedescriptions.
[1] During the netboot process, the Storage Node retrieves this image from the Content Services Node and runs it out of memory.
[2] LwA – UL is the upper limit sound power levels (LwA) calculated per section 4.4.1 of ISO 9296 (1988) and measured in accordance to ISO 7779 (1999).
[3] LpAm is the average bystander position A-Weighted sound pressure level calculated per section 4.4.4 of ISO 9296 (1988) and measured in accordance to ISO 7779 (1999).
[4] Optional failover configuration includes two DX6000G Cluster File Servers and one Dell MD3200i shared iSCSI storage unit.

Intelligently manage your data at Dell.com/datamanagement

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